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The 4th–3rd millennia BC in the eastern Baltic: inter- and counteractions. Reply to Teemu Mökkönen's and Kerkko Nordqvist's comments on the article 'Comb Ware cultures in the eastern Baltic' by Khrustaleva and Kriiska (2025)

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The past is a foreign country: they do things differently there.
L. P. Hartley

Introduction

We are very grateful that our colleagues Teemu Mökkönen (2026) and Kerkko Nordqvist (2026) responded to our call to initiate a discussion on the Comb Ware cultures in the eastern Baltic. However, this call has sharply highlighted a very serious problem – there are very few researchers of the 4th and 3rd millennia BC, and especially few who study the Comb Ware cultures; far too few. The base becomes extremely narrow if one sets as a prerequisite for qualification research on the sites and materials of these millennia, familiarity with their historiography,

and the organisation of excavations at archaeological sites of this time segment. The study of this core stage in eastern Baltic prehistory requires substantial reinforcement and a much greater investment than at present. We hope that our public discussion will also help to promote this.

In this short reply, we continue the discussion, respond to the most important points of criticism, provide some additional clarifications and examples, and at the same time further develop our line of reasoning concerning the Comb Ware cultures.

Bias towards Estonia

Nordqvist admonishes us for frequently approaching the material from an Estonian perspective and for not sufficiently taking into account the neighbouring regions of the Baltic States. However, we repeatedly looked beyond the eastern Baltic in our article when discussing the most important yet insufficiently defined artefact and raw material groups relevant for distinguishing the Comb Ware cultures, as well as their origins and geographical distribution. It was simply not possible to include more within the limits of the article. Nevertheless, neighbouring regions inevitably remain present in the background, as our existing knowledge of them influences our interpretations.

The observation of a mild bias towards Estonia is justified. This is conditioned not only by our own place of residence, but also by the historiographical discourse surrounding the Comb Ware cultures, as well as by the research results of the past three decades. In addition, it is specifically from Estonia that relatively more new information has emerged on the Stone Age pottery periods in the eastern Baltic, particularly concerning the Comb Ware cultures that are at the centre of our discussion. The more intensive research carried out in Estonia is also the reason why we initiated this 'reordering' and the search for broader interpretative frameworks. The time is ripe for this, as many of the positions still presented today were largely formulated in the 1950s–1980s, in a different academic environment, when dating methods were very limited or entirely absent and the available body of research material was considerably smaller.

In our view, a substantial empirical base grounded in Estonian Stone Age material has already been established. Over the past thirty years, excavations or more extensive surface surveys have been carried out at thirteen settlement sites of the Comb Ware cultures in Estonia (Fig. 1; selected publications: Kriiska 1996; 2002; Kriiska et al. 1998; Kriiska & Saluäär 2000; Kriiska & Rappu 2008; Kriiska & Lõugas 2009; Kadakas et al. 2010; Khrustaleva & Kriiska 2022; Kriiska et al. 2025). To this must be added studies of all burial sites and loose human bones of the Comb Ware cultures, including dietary isotope analyses of the interred individuals (Lõugas et al. 1996; Tõrv 2016; Tõrv & Erikson 2023),

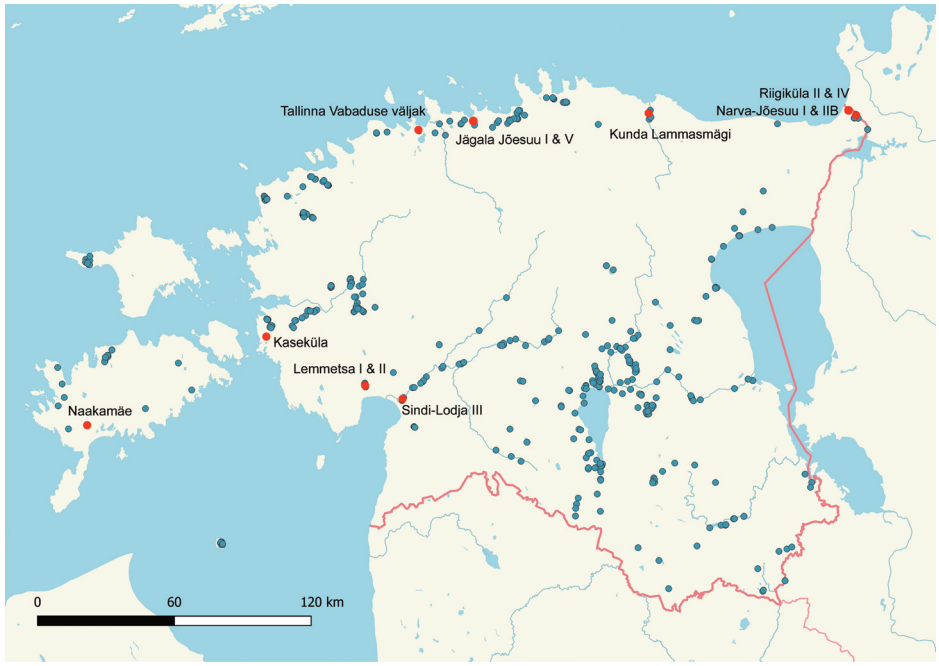

FIG. 1. Settlement sites of the Comb Ware cultures in Estonia studied over the past thirty years (red dots) and all known Stone Age sites (blue dots). Data after Sikk et al. 2020; Sander & Kriiska 2021; 2022.

as well as ancient DNA analyses of several skeletons (Saag et al. 2017; Mittnik et al. 2018). Comparative material has continuously been collected from find assemblages in Belarus, Finland, Latvia, Lithuania, and Russia, and relevant publications have been systematically monitored. Equally important is the study of other Stone Age cultures and the adoption of a long-term chronological perspective. The investigation of all Stone Age phases within a relatively small territory has created a strong foundation for distinguishing the different components of the Comb Ware phenomenon.

Several archaeological sites of the Comb Ware cultures are relatively well dated, and the find material has been fully analysed. Undoubtedly, there could always be more dates, but considering the small number of researchers in Estonia, this is, in our view, already a fairly good result, which should be included in a broader discussion without waiting for additional data. We cannot agree with our opponents' criticism of the dates presented in our article. If the selection of dates that have passed our verification (from which, inter alia, all dates have been excluded where it is not possible to determine the presence or extent of a reservoir effect – including dates obtained from pottery crusts that have not undergone lipid analysis) is not trusted, they can be checked through the references provided in the article to the publications of the primary data.

A critical perspective on historiography

Our views partly diverge in the understanding of how strongly ethnic interpretations of Stone Age populations in the eastern Baltic region have influenced the categorisation of pottery. Nordqvist considers our argument – that ethnic affiliations have shaped the grouping of pottery – to be an overinterpretation. We reiterate here that 'In our view, the idea of the Post-Narva culture in Latvia and Lithuania is largely rooted in the same [ethnic] reasoning. By focusing primarily on clay vessels with organic admixtures and largely ignoring other archaeological material, this approach saw continuity from the Narva culture as the ancestral culture of the Baltic tribes, which was only influenced by the Comb Ware culture as the ancestral culture of the Finnic tribes.'

Two key aspects deserve particular attention here. We emphasise once again that the core constructions have been built solely on pottery, largely on the composition of the clay fabric, which resembled that of Narva pottery. In other words, the typological observations made directly on the archaeological material were too narrow and, among other things, ignored the fact that organic temper and crushed shells in the clay fabric had already been identified as one of the characteristic features of Late Comb Ware (Yanits 1959, 136–139). The other aspect of this is the distancing from Comb Ware through the renaming of an already existing pottery type, and thereby also from the ethnic interpretation of Comb Ware. The technical change in terminology had a broader interpretative impact. In essence, in our view, both of these starting points are unsuitable as a basis for the typology of pottery.

We are aware that bringing the ethnic dimension to the fore in this topic may be perceived as irritating. Criticism of this is to be expected and will hardly end with the writings of our two esteemed opponents, as we are opening those drawers of historiography that have sunk into oblivion and may seem embarrassing to some. Yet this must be done, because interpretations in archaeology – as in other humanities – are to a great extent shaped by the researchers' own time (this issue has been repeatedly addressed in archaeology; see, for example, Shanks & Tilley 1987). The history of archaeology in the Baltic States extends back more than 160 years, and it must be understood, acknowledged, and taken into account as the background that has influenced what kinds of interpretations have been made of archaeological data and how. It is necessary to be aware of the mechanisms (including unreflected broad societal currents and pressures) that have operated behind scholarly research. One must adopt a critical stance towards the history of research, state this openly when necessary, and, if required, abandon previously drawn conclusions.

Attempts to define Stone Age populations in ethnic terms did not begin in the Baltic States during the Soviet period; as we demonstrated in our article, they were already actively present in the archaeology of the 1920s and 1930s.

Therefore, they cannot be directly equated with the Soviet era, as Nordqvist emphasises when stating that 'ethnic underpinnings were mandatory in Soviet archaeology'. Rather, at least in Estonia, ethnic interpretations of prehistory represent a continuation of nationally romantic archaeology (the search for one's roots) into the post-Second World War occupation period – in some sense even a form of ideological resistance to Soviet rule. It is true, however, that this tendency experienced a particular rise in the 1950s (see the relevant discussion in Ligi 1994). As an additional comment, one of the authors, Aivar Kriiska, began his career in archaeology during the Soviet period, and no requirement to produce ethnic interpretations was imposed on him; this was not mandatory.

We do not in any way wish to belittle this period of ethnic inquiry in Stone Age or more broadly in prehistoric archaeology, nor to label archaeologists whose research carried an ethnic dimension. The search for the roots of present-day peoples was – and remains – natural and clearly necessary in any society. It is difficult to imagine that, in the wake of the nation-states that began to emerge in the nineteenth century, this could have been entirely avoided.

On the classification of archaeological material

In classifying the archaeological material, we employed standard approaches, using categories that differ in purpose and level of generalisation: find group, raw material group, pottery type, and archaeological culture. In the case of groups and types, we examined those categories that, in our view, are associated with the Comb Ware cultures, emphasising that '… a more important role in defining the Comb Ware cultures as a whole is played by the presence of a specific set of objects and materials, such as amber, metatuff, flint and clay figurines, as well as the combination of modelling techniques and ornamental motifs on pottery, processing technology, and the shape of finished flint objects. The widespread distribution and, most importantly, the co-occurrence of these elements give a general characterisation of this cultural phenomenon.'

There is no need here to discuss the possible variations of each individual category, their temporal and spatial differences, their suitability within different archaeological cultures, or their connections to exchange networks, as pointed out by Nordqvist. We are aware of these issues and also briefly highlighted this topic in our article. The 'signature set', as the good opponent has called it, is not static, but the important thing is that its structural logic persists. By referring to a specific set of objects and materials, we do not imply a static or exclusive assemblage of artefacts, but rather a recurring configuration of material practices whose co-occurrence is historically patterned and archaeologically observable. It should be noted that exchange networks do not exist without social units. The recognition of exchange networks does not preclude the existence of broader socio-cultural formations; rather, such networks may themselves reflect and

sustain shared social frameworks. An examination of the distribution of foreign raw materials and objects made from them (some of which are presented in Khrustaleva & Kriiska 2025, fig. 1) makes it clear where these elements co-occur and overlap with pottery types that various archaeologists have linked to Typical or Late Comb Ware, or at least to pottery traditions influenced by them.

Pottery types have been defined in different ways, yet they are still based solely on diagnostic parameters (see the in-depth discussion in Klein 1991). Just as in the case of our diagnostic material and find groups, none of the separate pottery parameters alone is sufficient for distinguishing pottery types; only their combination allows for meaningful differentiation. Definitions of pottery types – without the number of variations and subtypes growing unreasonably large – are often possible only under ideal conditions. It may be almost accurate to suggest that this approach works most smoothly when only a single expert is involved. Thereafter, a chain of determinations emerges that depends not only on the researchers' competence but also to a great extent on experience (including the number of working hours and artefacts examined), training, and so forth.

Such is also the case with Late Comb Ware. We must briefly clarify the definition of this type, as both Mökkönen and Nordqvist have, in the Estonian case, oversimplified it as being based solely on the composition of the clay fabric. Late Comb Ware was defined in Estonia in the 1950s by Lembit Jaanits, primarily on the basis of ornamentation and the composition of the clay fabric, and through comparison he demonstrated that this type was also distributed in Latvia (Yanits 1959, 135–143, fig. 67). He regarded Late Comb Ware as the result of an internal development within the Comb Ware tradition (ibid. 341), in other words, as having evolved from Typical Comb Ware.

During the study of Stone Age pottery from the Narva region in the early 1990s, the set of parameters was expanded to include modelling techniques and firing characteristics, a more detailed morphological analysis through overall shape and volume, as well as wall and rim thickness, and rim and base shape, more detailed descriptions of the composition of the clay fabric, surface treatment, and ornamentation (Kriiska 1995b). These studies showed that, based on Jaanits' typology, two groups could be distinguished within the local Late Comb Ware: one ornamentally closer to Typical Comb Ware and the other more distinctive. At the time, this appeared to represent a chronological sequence, but this assumption was not based on any dated pottery assemblages, as radiocarbon dates were entirely lacking (ibid. 106).

Subsequent research has demonstrated that the composition of the clay fabric, ornamental elements and motifs, as well as modelling techniques characteristic of Typical Comb Ware or Late Comb Ware are not arranged in a clear chronological sequence in Estonia. For this reason, the division into Typical and Late Comb Ware does not function in the best possible way. Questions also remain regarding Typical Comb Ware, including in Finland, from whose perspective our

critics largely assess the issue. It is defined by our opponents, on the one hand, as a clearly identifiable and well-delimited entity, although the date of its termination remains uncertain and its eastern and southern boundaries are still under discussion; on the other hand, it is described variously as a phase, a period, or a unit. Yet, if it is a phase, then it must be part of some broader unit. There are insufficient fixed points for drawing a clear boundary, and if such a boundary is drawn, it relies to a large extent on subjective judgement. Perhaps this can be overcome in the future through a much more detailed analysis of pottery covering a larger number of sites and supported by more numerous radiocarbon dates; however, this is the current reality we should work with.

The socio-cultural basis of pottery types is not unambiguous. From a global perspective, pottery production technologies, vessel forms, and ornamentation may change independently of broader social processes, such as economic, political, or demographic developments, or shifts in norms and values; yet they may also remain remarkably stable even when society itself undergoes transformation (see, for example, Barnard 2008, 99 and the literature cited therein). In Estonia, all clearly defined and major changes in Stone Age pottery types, including Narva-type pottery, Typical Comb Ware, and Corded Ware have been associated with genetically distinct populations (Saag et al. 2017; Saag et al. 2021; Mittnik et al. 2018).

Another central category in Stone Age archaeology is the archaeological culture, which we emphasise in our article as a means of recognising broader socio-cultural communities of Stone Age populations and of taking into account not only pottery but also other aspects of material culture. By integrating multiple categories of material culture, it becomes possible to identify consistent patterns rather than isolated traits, thereby reducing interpretative subjectivity and strengthening the methodological robustness of the analysis through cross-checking and reproducibility.

The term ‘archaeological culture’ has been defined repeatedly and its definitions endlessly reiterated, yet, in principle, the starting point remains the similarity of material culture and the contemporaneity of these similarities within a defined territory (see the in-depth discussion in Klein 1991). Gordon Childe (1929, v–vi) defined it as the co-occurrence of certain types of pottery, tools, ornaments, burial rites, and dwelling forms. From this definition, only architecture has largely been omitted in contemporary usage. Similarly, our own division was based on shared features present in the material record within a particular time and area. In addition, we placed emphasis on cultural continuity.

Nordqvist reproaches us for not presenting a theoretical framework for archaeological cultures in the article. He is right. In this respect, our article does not differ from the vast majority of European publications dealing with the Stone Age, in which archaeological cultures exist as a primary category but are not redefined anew. Likewise, we proceed from the assumption that an archaeological readership automatically understands them, at a basic level, as assem-

blages of material culture elements concentrated within a defined territory at a defined period of time. Whether an archaeological culture constitutes a 'polythetically derived socio-cultural knowledge transfer system' or a 'demographic or biological entity' is an excellent question – but it simply cannot be accommodated within this article. This is too great to expect of us in this context.

The search for the meaning of the archaeological culture concept is more than a century old and has oscillated between extremes. On the one hand, archaeological cultures have been treated as the direct material expression of different ancient peoples – not only by Gustaf Kossinna (1911), but this definition also formed the basis of the entire ethnic approach to the Stone Age in the eastern Baltic region. On the other hand, the opposite extreme views archaeological culture as merely an instrumental concept, created by archaeologists as a tool for organising archaeological research material. Both ends of the spectrum are problematic. So far, it has not been possible to fully separate the material cultures distinguished by archaeologists from past realities themselves. Rather, the instrumentalisation of the archaeological culture concept – previously also supported by one of the authors of the present article (Kriiska & Tvauri 2002, 54; Kriiska et al. 2020, 49) – appears to have reached its explanatory limits. The similarities observed must have been caused by something that, in one way or another, united Stone Age groups or at least distinguished them from others with different material cultures.

Does regional heterogeneity invalidate shared cultural horizons?

Our opponents appear to have gained the mistaken impression that we seek to set aside cultural diversity and do not acknowledge changes within the Comb Ware cultures. Owing to the aims and scope limitations of our article, we were unable to engage with individual issues in depth; this may explain how such an understanding has arisen. Here, we briefly outline several points that may help to clarify the main ideas underlying our approach to the Comb Ware cultures. We also briefly introduce the evidence from ancient DNA studies, as broader socio-cultural processes must in any case be examined in conjunction with population genetic data. The inclusion of genetic evidence is theoretically justified, since socio-cultural dynamics unfold through concrete populations whose biological histories leave detectable traces in the genetic record. Integrating such data therefore contributes to a methodologically coherent and genuinely interdisciplinary approach.

Our point of departure has not been, and is not, the levelling of differences, but rather the question of whether, during the 4th and 3rd millennia BC – and perhaps even at the beginning of the 2nd millennium BC – substantial common elements can be observed in the material culture of the eastern Baltic. The existence of

shared features does not automatically exclude variations in any way. One reason for this is that, based on Jaanits' pottery typology (Yanits 1959, 135–143, fig. 67) and our experience in studying Comb Ware in Estonia, in most cases where we have examined Latvian pottery types designated by different names (Porous Ware, Post-Narva Ware, Piestiņa-type pottery, and Abora-type pottery), we have concluded that, based on the parameters underlying our pottery typological framework, these do not extend beyond the range of variation characteristic of Late Comb Ware. Lithuanian scholarship, however, offers a different perspective, according to which Piestiņa-type pottery represents a stylistic variant of Narva-type pottery (Brazaitis 2002). To this we may add the view from Finland, according to which Piestiņa-type pottery in Latvia may be regarded as 'a relative of Pyheensilta Ware', although its broad comb ornamentation more closely resembles Typical Comb Ware or Jäkärlä Ware (Vikkula 1987, 165). The primary recognition of pottery types is based on the individual experience and competence of the researcher, including the assessment of the significance of variations (Shepard 1971, 98). But why do we have such markedly different experiences? If the differences in typological determinations and in the associations linked to pottery prove irreconcilable, it becomes necessary to broaden the scope of research by examining other contemporaneous materials and artefacts, since pottery constitutes only one part of the objects produced and used by Stone Age communities.

In general, during the 4th and 3rd millennia BC, three major socio-cultural units can be identified in the eastern Baltic. These differ from one another, yet within each of them there exists, despite internal variation, a sufficient degree of shared features. These are (1) the Narva, (2) the Comb Ware, and (3) the Corded Ware cultures (Fig. 2). In various combinations, this represents a fairly standard understanding in the archaeology of the Baltic States. However, within the Stone Age discourse in this region, the issues surrounding the Narva and Comb Ware cultures – their boundaries, chronology, and mutual relationships – constitute one of the central topics. Among other things, this is important for understanding both the origins and the development of the Comb Ware cultures.

The Narva culture, including Narva-type pottery, which was first distinguished on the basis of Estonian material (Yanits 1959, 122–127), has been systematically studied in Estonia and Ingria. A particularly important role has been played by investigations along the seacoast and on the islands, where human settlement followed changes in the water levels of the Baltic Sea and where the period suitable for habitation was therefore shorter than at sites located along inland water bodies (e.g. Kriiska 2002; Kriiska et al. 2017). So far, not a single Narva culture settlement site later than 3900 BC has been found in Estonia or Ingria (Fig. 3). Nor do Narva culture settlement sites occur on fossil coastal formations that were certainly situated on the seashore and thus represented the most suitable water-oriented habitats during the period of the Comb Ware cultures (see e.g. Jussila & Kriiska 2004). All available ancient DNA analyses of human remains recovered from Narva and Comb Ware contexts in Estonia

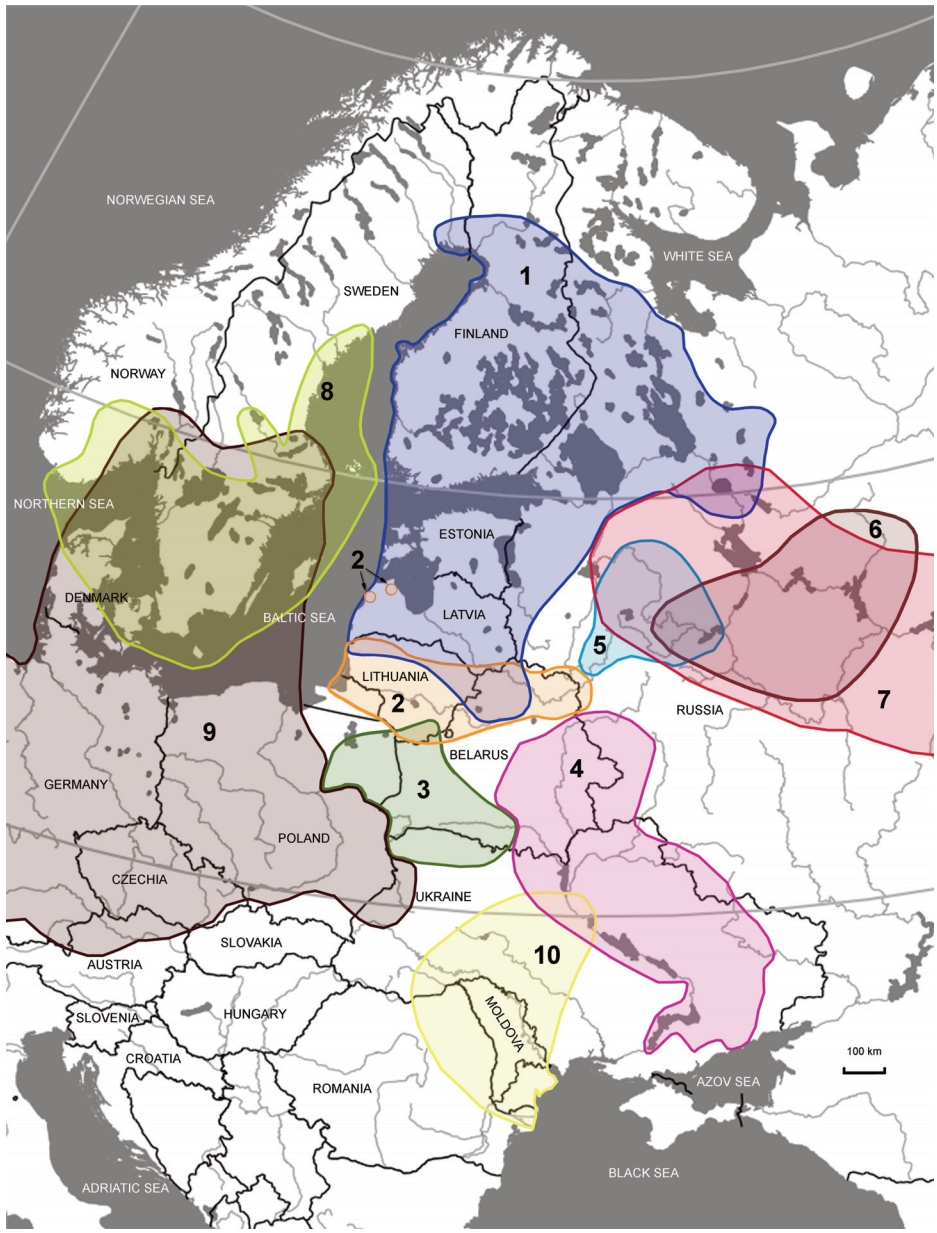

FIG. 2. Archaeological cultures / cultural complexes of the 4th millennium BC in the eastern Baltic region and beyond: 1 – Comb Ware; 2 – (Late) Narva (including sites with Sārnate-type pottery in Latvia, shown by dots); 3 – Pripyat-Neman; 4 – Dnieper-Donec; 5 – Valday; 6 – Lyalovo; 7 – Volosovo; 8 – Pitted Ware; 9 – Funnel Beaker; 10 – Trypillia. After Khrustaleva 2025, fig. 4.

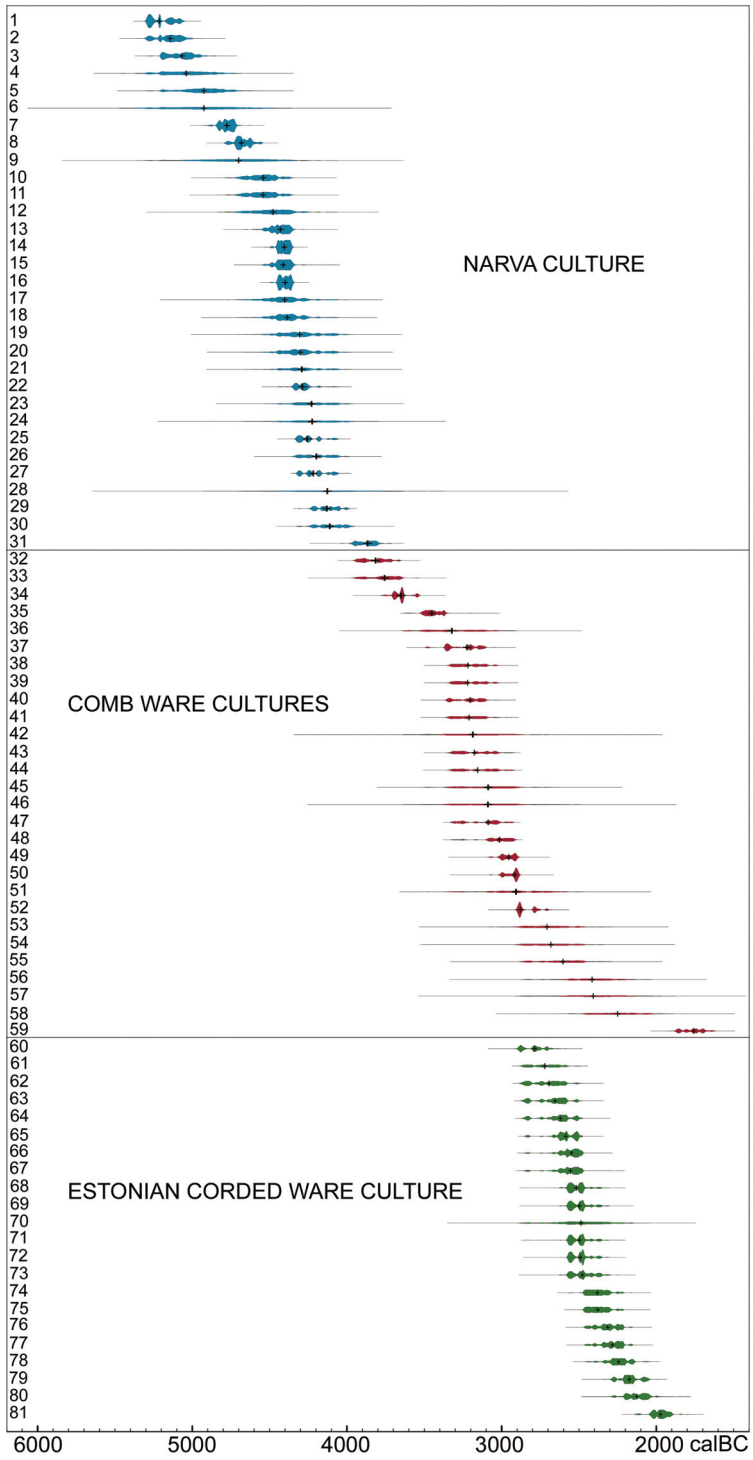

FIG. 3. Radiocarbon chronology of Stone Age archaeological cultures in Estonia and Ingria (Reimer et al. 2020; Bronk Ramsey 2021). For the raw data, see Appendix (the numbers in the figure correspond to those in the Appendix).

indicate that these populations were genetically distinct (Mittnik et al. 2018, fig. 3; part of the Comb Ware culture dataset in Saag et al. 2017).

The situation is different in much of Lithuania, where the continuity of the Narva culture and, accordingly, Narva-type pottery, leaving aside scholarly disagreements regarding its duration, variability, and external influences, has been dated to the early centuries of the 2nd millennium BC (Girininkas & Daugnora 2016, 44). Ancient DNA analyses of Narva culture individuals from Lithuania show that their genetic composition is fairly similar to that of analysed Narva culture individuals from Estonia and Latvia, and different from individuals of the Comb Ware cultures (Mittnik et al. 2018, 6, fig. 2).

In Latvia and in the northern part of Lithuania, however, the picture is more complex. In both areas, the presence of both the Narva culture and the Comb Ware cultures has been convincingly demonstrated (Loze 1984; 1988; Girininkas & Daugnora 2016; Piličiauskas et al. 2019). So far, however, in Latvia there are no radiocarbon-dated sites that would confirm the continuation of the Narva culture after the emergence of the Comb Ware cultures. If the Sārnate-type settlement sites are regarded as part of the Narva culture (Bērziņš 2008, 133), which seems to us a well-founded position, then the existence of a (Late) Narva culture on the western coast of Latvia contemporaneously with the Comb Ware cultures has been demonstrated. It remains uncertain, however, whether this represents local continuity from the pre-Comb Ware Narva culture or rather a later resettlement from the south. Genetic analyses of human remains from Latvia suggest genetic differentiation between the Narva and Comb Ware populations (Mittnik et al. 2018, 6).

Let us set aside Latvia and northern Lithuania, where radiocarbon dates are so few that any interpretation can immediately be called into question on the grounds of data representativeness, and instead consider the situation in Estonia. It has repeatedly been suggested that Late Comb Ware in Estonia developed as a kind of hybrid of Narva pottery and Typical Comb Ware (e.g. Jaanits et al. 1982, 77; Kriiska 1995b, 106). The problem, however, is that if the Late Comb Ware type developed from Typical Comb Ware several centuries after its emergence, how was 'hybridisation' possible with a pottery tradition that had been produced several generations earlier and, according to current ancient DNA evidence (Saag et al. 2017; Mittnik et al. 2018), by genetically distinct populations who had already disappeared by the time the Late Comb Ware type emerged?

And from this arises a multitude of questions. What should be done? Should the current dataset be regarded as sufficiently representative and reliable, and taken as the basis for drawing conclusions? Or would it be more reasonable to continue with assumptions lacking empirical support (as we did, for example, in our article), namely that the arrival of Comb Ware populations did not (at least initially) lead to the complete assimilation or destruction of local groups, but rather resulted in varying degrees of integration in different regions and corresponding differences in material culture? Does the emergence of regional traits

necessarily presuppose the intervention of culturally or genetically distinct populations, or might it reflect internal cultural development, the need for smaller groups to differentiate themselves, the limited scope of integrative practices that maintained similarities, or something else entirely? For example, genetic studies of human remains associated with the Estonian Corded Ware culture and the Fatyanovo culture in Russia (Saag et al. 2017; 2021) indicate that regional differences in material culture do not necessarily correspond to major changes in the genetic composition of populations. Genetic homogeneity has been documented in Denmark throughout the Mesolithic, where three distinct archaeological cultures – Maglemose, Kongemose, and Ertebølle – are nevertheless distinguished (Allentoft et al. 2024). We do not have definitive answers, but we acknowledge that the continuation of the Narva culture after the emergence of the Comb Ware cultures, particularly in Latvia and northern Lithuania, is possible.

In order to broaden the empirical base, we examined other artefact categories used during the 4th and 3rd millennia BC that various scholars have associated with the Comb Ware cultures. The identification of diagnostic artefact types is unavoidable in archaeology. First, throughout the Stone Age, tool production relied to a greater or lesser extent on locally available raw materials. This in itself creates variability, which considerably complicates comparison. In the eastern Baltic region, three distinct raw material zones can be clearly observed throughout the Stone Age: where local flint was available, it was the dominant material; in areas lacking flint, quartz was primarily used; and on the western Estonian islands, Baltic red quartz porphyry was also employed (see e.g. Kriiska et al. 2020, 72–73, 124–125). Thus, we are in what is in fact a fairly typical and quite general archaeological situation, where broader similarities are reflected only in certain – and often relatively small – portions of the find material. Within the area of the Comb Ware cultures, in our view, there is regularity in the occurrence of diagnostic materials and artefact types, including bifacial reduction technology, and this assemblage clearly distinguishes itself from the 'signature sets' of both the Narva and the Corded Ware cultures. Certainly, these artefacts and materials do not co-occur at all sites, since archaeological sites were used in different ways and investigated to varying extents. Nevertheless, their overall distribution within the eastern Baltic region can be outlined and broadly coincides with the area in which Comb Ware or Comb Ware-influenced pottery types are identified.

Cultural changes are relatively easy to distinguish when they are profound, as is evident in the case of the Comb Ware cultures in comparison with the Narva and Corded Ware cultures. By contrast, internal comparison within the Comb Ware cultures is far more complex. Both regional and chronological variations undoubtedly exist within the Comb Ware cultures, yet their temporal and spatial dimensions remain insufficiently described. However, by shifting perspective, it may be precisely within this diffuseness that continuity can be perceived. We fully acknowledge that not all elements of this configuration are strictly syn-

chronous or uniformly distributed; our argument concerns long-term structural continuity rather than momentary typological uniformity.

Regional traits are present in all Stone Age pottery-bearing cultures of the eastern Baltic. In the case of the Narva culture, differences have been addressed by defining them as internal variations within a single culture (e.g. Kriiska 1997 and the literature cited therein), whereas in the case of the Corded Ware cultural complex they have been treated as distinct but closely related cultures (see Kriiska et al. 2020, 154). Both approaches follow the respective research traditions of those cultures. Whether there is a substantive difference between these definitions is not the subject of the present article. Similarly, the regional and chronological differences within the Comb Ware culture(s) may be described either as variations within a single culture or as separate archaeological cultures. Which of these interpretations will ultimately prevail remains to be seen.

We once again emphasise that neither in our article nor now do we question the possible regional variations within the Comb Ware cultures. The proposed concept is not intended to dissolve regional and chronological distinctions, but to provide a comparative framework within which such differences can be meaningfully evaluated. Regionality is not a uniform phenomenon; it operates on multiple levels and does not preclude the existence of broader socio-cultural complexes.

In conclusion: the motivation for change

The article at the centre of our present discussion was motivated by the fact that the ambiguity of archaeological categories, the tangle of terminology, and the absence of new syntheses in the Baltic region hinder further research. Its aim was not so much to offer solutions regarding the Comb Ware cultures as to provide an overview of the current state of research, including the various problems associated with the Comb Ware cultures in the eastern Baltic, in order to initiate discussion and prepare a platform for future work – as we explicitly stated. Rather than reinforcing a homogenising culture-historical framework, the paper critically outlined the existing diversity of interpretations, terminological inconsistencies, and regional variations. Far from assigning a single, unified 'culture' to a region, it explicitly highlighted the fragmentation of the concept and the need for methodological reassessment. The critique appears to engage with a set of assumptions about our aims that do not correspond to the objectives articulated in the text.

We were not engaged in changing anything; rather, we asked the same question as Mökkönen: do we have sufficient evidence to accept the renaming of materials (and thus assigning them an entirely different meaning) that were originally associated with Late Comb Ware (Yanits 1959, fig. 67) as pottery whose manufacturing traditions could be directly linked to Narva culture popu-

lations that remained in this territory? Were these changes justified and adequately substantiated? We did not call for abandoning pottery typology, nor did we reassess the criteria for defining the Comb Ware cultures (and we find it difficult to agree with such an interpretation), since the definition of an archaeological culture has not been based solely on pottery types. Approaches that rely exclusively on pottery typology risk overlooking the broader conceptual foundations of the archaeological culture concept. Rather, we called for looking beyond pottery to other artefacts, materials, and technologies – precisely what the definition of an archaeological culture presupposes.

Proceeding from this, it currently seems to us that Latvia (with the exception of the Sārnate-type settlement sites) and the northern part of Lithuania fall within the customary area of the Comb Ware cultures. The material culture there, including pottery, does not extend beyond the range of variation characteristic of the Comb Ware cultures. What underlay these variations – whether (1) biological as well as cultural mixing of Narva culture populations into the emerging Comb Ware culture at the beginning of its spread, (2) internal development within the Comb Ware cultures, or (3) influences and interactions originating from the south, where the Narva culture continued for another couple of millennia – remains, in our view, far from clear. Cultural continuity with the Typical Comb Ware stage nevertheless appears evident. Our interpretation may, of course, prove open to revision in the case of the emergence of strong arguments. A greater risk, however, lies in becoming bogged down in minor issues, restricting ourselves to the scale of a micro-region or a modern nation-state, and refraining from broader socio-cultural generalisations. We fully agree that in the future we need a series of well-dated regional studies, as urged by Mökkönen, and that a bottom-up approach, as emphasised by Nordqvist, is important – points that were clearly implied in our discussion of chronological refinement and regional variation. We do not agree, however, that until such work has been carried out, we should abstain from striving to produce broader conceptual syntheses on the basis of the material already available.

DATA AVAILABILITY STATEMENT

All data are included within the article.

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Appendix

Radiocarbon dates from Stone Age archaeological sites in Estonia and Ingria that form the basis for the chronology of the archaeological cultures presented in Fig. 3

No.	Culture	Archaeological site	Sample material (*reservoir effect)	Lab code	Radiocarbon date, BP	Radiocarbon date with reservoir effect correction, BP	Reference
1	Narva culture	Riigiküla I settlement site	Animal bone	KIA-53825	6237 ± 27		Khrustaleva et al. 2020
2	Narva culture	Izvoz 2 settlement site	Animal bone	Hela-2742	6212 ± 48		Rosentau et al. 2013
3	Narva culture	Riigiküla VI settlement site	Animal bone	Hela-1909	6130 ± 45		Kriiska & Nordqvist 2012
4	Narva culture	Kõnnu burial and settlement site	Seal bone*	Poz-30039	6460 ± 40	6113 ± 113	Kriiska et al. 2017
5	Narva culture	Riigiküla IV settlement site	Charcoal	Tln-1989	6023 ± 95		Kriiska 1999
6	Narva culture	Kunda Lammasmägi settlement site	Animal bone	TA-12	6015 ± 210		Liiva et al. 1965
7	Narva culture	Kääpa settlement site	Plant fibre	KIA-51075	5910 ± 29		Kriiska et al. 2017
8	Narva culture	Lommi III settlement site	Animal bone	Beta-309096	5820 ± 30		Rosentau et al. 2013
9	Narva culture	Narva Joaorg settlement site	Charcoal	TA-33	5820 ± 200		Ilves et al. 1974
10	Narva culture	Kõpu IA settlement site	Charcoal	Tln-1901	5698 ± 70		Kriiska 1995a
11	Narva culture	Kääpa settlement site	Animal tooth	KIA-357337	5698 ± 73		Sommer et al. 2011
12	Narva culture	Riigiküla IV settlement site	Charcoal	Tln-1990	5624 ± 115		Kriiska 1996
13	Narva culture	Kõpu IA settlement site	Charcoal	Tln-1873	5604 ± 52		Kriiska 1995a
14	Narva culture	Lommi III settlement site	Seal bone (apatite)	KIA-55278	5578 ± 26		Khrustaleva & Kriiska 2021
15	Narva culture	Kõpu IA settlement site	Charcoal	Le-5452	5575 ± 50		Kriiska 2002
16	Narva culture	Riigiküla I settlement site	Animal bone	KIA-53827	5559 ± 28		Khrustaleva et al. 2020
17	Narva culture	Vihasoo III settlement site	Seal bone*	Poz-58930	5895 ± 35	5548 ± 108	Kriiska et al. 2017
18	Narva culture	Kõpu IA settlement site	Charcoal	TA-1493	5530 ± 90		Kriiska 1995a
19	Narva culture	Riigiküla IX settlement site	Charcoal	Tln-1890	5469 ± 111		Kriiska 1995b
20	Narva culture	Kõpu IA settlement site	Charcoal	Tln-1898	5464 ± 96		Kriiska 1995a
21	Narva culture	Kõpu IA settlement site	Charcoal	Ta-2686	5460 ± 100		Kriiska 2002
22	Narva culture	Galik 3 settlement site	Animal bone	Hela-2743	5442 ± 45		Rosentau et al. 2013
23	Narva culture	Ruhnu II settlement site	Charcoal	Ta-2716	5400 ± 100		Kriiska & Saluäär 2000
24	Narva culture	Ruhnu II settlement site	Charcoal	Le-5628	5400 ± 150		Kriiska & Saluäär 2000
25	Narva culture	Riigiküla I settlement site	Bone tool	KIA-53828	5385 ± 30		Khrustaleva et al. 2020

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APPENDIX. *Continued*

No.	Culture	Archaeological site	Sample material (*reservoir effect)	Lab code	Radiocarbon date, BP	Radiocarbon date with reservoir effect correction, BP	Reference
26	Narva culture	Kõpu IA settlement site	Charcoal	Tln-1871	5370 ± 68		Kriiska 1995a
27	Narva culture	Riigiküla I settlement site	Bone tool	KIA-53824	5364 ± 27		Khrustaleva et al. 2020
28	Narva culture	Narva Joaorg settlement site	Charcoal	TA-7	5300 ± 250		Ilves et al. 1974
29	Narva culture	Riigiküla I settlement site	Animal bone (tool?)	KIA-53826	5285 ± 30		Khrustaleva et al. 2020
30	Narva culture	Riigiküla XII settlement site	Charcoal	Tln-1992	5268 ± 58		Kriiska 1999
31	Narva culture	Kuzemkino 1 settlement site	Animal bone	Hela-1945	5090 ± 40		Kriiska & Nordqvist 2012
32	Comb Ware cultures	Lommi III settlement site	Organic crust from potsherd	Poz-133186	5020 ± 40		Khrustaleva & Kriiska 2021
33	Comb Ware cultures	Lommi III settlement site	Organic crust from potsherd	Poz-133669	4970 ± 70		Khrustaleva & Kriiska 2021
34	Comb Ware cultures	Riigiküla II settlement site	Charcoal	Hela-3256	4872 ± 38		Kriiska et al. 2017
35	Comb Ware cultures	Narva-Jõesuu IIB settlement site	Hazelnut shell	Poz-87712	4650 ± 40		Vanhanen et al. 2023
36	Comb Ware cultures	Naakamäe settlement site	Seal bone*	Poz-190248	4940 ± 40	4593 ± 113	Kriiska et al. 2025
37	Comb Ware cultures	Narva-Jõesuu IIA settlement site	Animal bone	Hela-2741	4557 ± 34		Kriiska & Nordqvist 2012
38	Comb Ware cultures	Naakamäe settlement site	Animal bone	KIA-54032	4483 ± 28		Khrustaleva & Kriiska 2020
39	Comb Ware cultures	Naakamäe settlement site	Animal bone	KIA-54026	4477 ± 27		Khrustaleva & Kriiska 2020
40	Comb Ware cultures	Naakamäe settlement site	Animal bone	KIA-54028	4526 ± 28		Khrustaleva & Kriiska 2020
41	Comb Ware cultures	Narva-Jõesuu IIB settlement site	Animal bone	Poz-5891	4500 ± 35		Kriiska et al. 2015
42	Comb Ware cultures	Kudruküla settlement site	Seal bone*	Ua-4827	4835 ± 100	4488 ± 173	Lõugas et al. 1996
43	Comb Ware cultures	Jägala Jõesuu V settlement site	Hazelnut shell	Poz-115983	4460 ± 35		Khrustaleva & Kriiska 2022
44	Comb Ware cultures	Tallinn Vabaduse väljak settlement site	Animal bone	Poz-35401	4450 ± 40		Lõugas & Tomek 2013
45	Comb Ware cultures	Tallinn Vabaduse väljak settlement site	Seal bone*	Hela-1923	4750 ± 40	4403 ± 113	Kadakas et al. 2010
46	Comb Ware cultures	Kudruküla settlement site	Seal bone*	Ua-4826	4750 ± 100	4403 ± 173	Lõugas et al. 1996
47	Comb Ware cultures	Jägala Jõesuu V settlement site	Animal bone	UBA-29062	4438 ± 29		Khrustaleva & Kriiska 2022
48	Comb Ware cultures	Jägala Jõesuu V settlement site	Hazelnut shell	Poz-115982	4400 ± 35		Khrustaleva & Kriiska 2022
49	Comb Ware cultures	Tallinn Vabaduse väljak settlement site	Animal bone	Beta-409162	4340 ± 30		Muru et al. 2017
50	Comb Ware cultures	Viljapea settlement site	Bone tool	Poz-59063	4315 ± 30		Kriiska et al. 2016
51	Comb Ware cultures	Tallinn Vabaduse väljak settlement site	Seal bone*	Hela-1922	4630 ± 40	4283 ± 113	Kadakas et al. 2010
52	Comb Ware cultures	Tallinn Vabaduse väljak settlement site	Animal bone	Beta-409161	4240 ± 30		Muru et al. 2017
53	Comb Ware cultures	Naakamäe settlement site	Seal bone*	Poz-190245	4485 ± 35	4138 ± 108	Kriiska et al. 2025

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APPENDIX. *Continued*

No.	Culture	Archaeological site	Sample material (*reservoir effect)	Lab code	Radiocarbon date, BP	Radiocarbon date with reservoir effect correction, BP	Reference
54	Comb Ware cultures	Naakamäe settlement site	Seal bone*	Poz-190246	4460 ± 35	4113 ± 108	Kriiska et al. 2025
55	Comb Ware cultures	Loona settlement site	Animal bone	Ua-4825	4050 ± 80		Lõugas et al. 1996
56	Comb Ware cultures	Kaseküla settlement site	Seal bone*	Poz-59066	4280 ± 30	3933 ± 103	Khrustaleva & Kriiska 2025
57	Comb Ware cultures	Loona settlement site	Seal bone*	Ua-4824	4270 ± 75	3923 ± 148	Lõugas et al. 1996
58	Comb Ware cultures	Lemmetsa I settlement site	Seal bone*	Poz-58929	4155 ± 35	3808 ± 108	Khrustaleva & Kriiska 2025
59	Comb Ware cultures ?	Naakamäe settlement site	Hazelnut shell	Poz-186631	3450 ± 35		Kriiska et al. 2025
60	Estonian Corded Ware culture	Narva-Jõesuu IIB settlement site	Animal bone	Poz-58913	4215 ± 35		Kriiska et al. 2016
61	Estonian Corded Ware culture	Ruhnu Valgi settlement site	Charred crust	Poz-30595	4130 ± 40		Konsa & Ots 2009
62	Estonian Corded Ware culture	Ardu burial site, burial II	Human bone	Poz-10824	4110 ± 40		Kriiska et al. 2007
63	Estonian Corded Ware culture	Sope B burial site, burial II	Human bone	Poz-10787	4090 ± 35		Kriiska et al. 2007
64	Estonian Corded Ware culture	Sope B burial site, burial I	Animal bone	UBA-45549	4073 ± 36		Oras et al. 2023
65	Estonian Corded Ware culture	Sope B burial site, burial I	Animal bone	UBA-40305	4057 ± 27		Oras et al. 2023
66	Estonian Corded Ware culture	Tika burial site	Human bone	Poz-10803	4035 ± 35		Kriiska et al. 2007
67	Estonian Corded Ware culture	Ardu burial site, burial II	Animal bone	UBA-38464	4034 ± 41		Oras et al. 2023
68	Estonian Corded Ware culture	Narva-Jõesuu IIB burial site, burial 2	Hazelnut shell	Poz-87715	3980 ± 35		Vanhanen et al. 2023
69	Estonian Corded Ware culture	Tallinn Müller's Field settlement site	Animal bone	UBA-45532	3970 ± 35		Oras et al. 2023
70	Estonian Corded Ware culture	Riigiküla XIV settlement site	Charcoal	Ta-2680	3970 ± 100		Kriiska 2000
71	Estonian Corded Ware culture	Sope B burial site, burial I	Human bone	UBA-29064	3969 ± 32		Rasmussen et al. 2015
72	Estonian Corded Ware culture	Sope B burial site, burial I	Animal bone	UBA-40304	3964 ± 28		Oras et al. 2023
73	Estonian Corded Ware culture	Kunila burial site, burial II	Human bone	Poz-10825	3960 ± 40		Kriiska et al. 2007
74	Estonian Corded Ware culture	Kunila burial site	Animal bone	UBA45547	3889 ± 36		Oras et al. 2023
75	Estonian Corded Ware culture	Kunila burial site	Animal bone	UBA-45543	3883 ± 32		Oras et al. 2023
76	Estonian Corded Ware culture	Narva-Jõesuu IIB burial site, burial 2	Hazelnut shell	Poz-87714	3845 ± 30		Vanhanen et al. 2023
77	Estonian Corded Ware culture	Kunila burial site	Animal bone	UBA-45542	3830 ± 29		Oras et al. 2023
78	Estonian Corded Ware culture	Karlova burial site	Human bone	Poz-15499	3805 ± 35		Kriiska et al. 2007
79	Estonian Corded Ware culture	Narva-Jõesuu IIB settlement site	Animal bone	Poz-58914	3755 ± 30		Kriiska et al. 2016
80	Estonian Corded Ware culture	Rosson 1 settlement site	Animal bone	Hela-2744	3725 ± 40		Rosentau et al. 2013
81	Estonian Corded Ware culture	Väike-Ropsu 1 settlement site	Animal bone	Hela-2516	3607 ± 31		Rosentau et al. 2013

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